SCHOOL OF BIOLOGICAL SCIENCES • SECTION OF MOLECULAR GENETICS AND MICROBIOLOGY

THE UNIVERSITY OF TEXAS AT AUSTIN

1 University Station A5000 • Austin, TX 78712-0162
512-471-5105 • FAX 512-471-7088 • http://www.biosci.utexas.edu/mgm/

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Dr. Yves Brun
Systems Biology/ Microbiology Faculty Search
Department of Biology
Indiana University
Jordan Hall 142, 1001 E 3rd St
Bloomington IN 47405-7005

Dear Dr Brun, Yves

It is my great pleasure to write this letter in support of Dr. Insuk Lee's application for a faculty position. I was his thesis advisor from 1997-2002. My laboratory works in the general area of Mu transposition, which is closely related to AIDS research because the HIV virus uses transposition to integrate its genome into that of its host. Mu transposition is also related to immunoglobulin rearrangements, which have recently been shown to be linked to various carcinomas.

Dr. Lee submitted an outstanding dissertation in which he made important scientific contributions to understanding the mechanism of transposition. He published three excellent papers. The most notable aspect of his tenure in my lab was his tenacity in solving problems. He spent the first two years just setting up an in vivo transposition assay. The challenge he faced was that Mu was too efficient a transposon! He found out that it was not easy to downregulate its activity. But he doggedly pursued the problem till he solved it and got the assay to work beautifully. This assay was used to understand why a large number of transposable elements (including Mu and HIV) encode CA as their terminal dinucleotide. Dr. Lee's results led him to argue for a structural basis for the selection of CA at transposon ends. This work was published in the Journal of Molecular Biology in 2001.

In order to test the hypothesis that the terminal dinucleotide plays an essential structural role during 'open termini' formation accompanying assembly of the transposition complex, Dr. Lee next examined the in vitro activity of substrates carrying a hundred different pairs of mismatched termini. It was an enormous amount of work that again required setting up new assays. He found that a wild-type T residue on the bottom strand is essential for stable assembly of the complex, but that the identity of the dinucleotide on the top strand is irrelevant for transposition chemistry. This work was published in Journal of Molecular Biology in 2003.

Dr. Lee finally extended his studies on Mu to understand the sequence conservation at the termini of LTR retrotransposons and DNA transposons in the human genome. These studies were an offshoot of his preparation for post-doctoral studies in Genomics. He took

computational classes to educate himself on statistical analyses among other things. This work was published in Nucleic Acids Research in 2003.

Influenced by the human genome project, Dr. Lee decided to do his post-doctoral work in Bioinformatics. Within a year of his post-doctoral tenure in Dr. Edward Marcotte's laboratory, he developed a new framework for reconstruction of gene networks. The importance of this work is demonstrated by its recent publication in Science.

Some of the most impressive attributes of Dr Lee are his foresight, hard work, persistence, and problem solving skills. He now has more than 8 years of experience in biochemical and genetic experimental science, and 4 years in computational biology. Based on his multi-disciplinary experience and impressive track record in different research fields, I have no doubt that he will play a critical role in cutting-edge biological research.

In summary, I have the highest praise for Dr. Lee. Not only is he very congenial, and interacts well with colleagues, but he probably belongs to only a handful of researchers with the experimental and theoretical skills required to meet the future challenges of modern medicine. I am confident that he will be an asset to your institution.

If you need any additional information, please do not hesitate to contact me.

Sincerely,

Rasika

Rasika M. Harshey, Ph.D.
Professor
Molecular Genetics and Microbiology
University of Texas at Austin